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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,047	10/25/2000	Volker Schumacher	48985	9171

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EXAMINER
MEDINA SANABRIA, MARIBEL

ART UNIT	PAPER NUMBER
1754	14

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No.	Applicant(s)
	09/674,047	SCHUMACHER ET AL.
	Examiner	Art Unit
	Maribel Medina	1754

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 22 and 29 are objected to because of the following informalities:

   a. In claim 22, line 7, "deomposition", should be changed to --decomposition--.

   b. In claim 29, line 2, "decompoosition", should be changed to --decomposition--.

   Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 22-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kongshaug et al.

In regards to claim 22, Kongshaug et al disclose a reactor for the catalytic oxidation of ammonia to nitrogen oxides comprising; a catalyst package comprising noble metal gauze, which usually comprises several noble metal gauzes and recovery gauzes for noble metal; and a heat exchanger (See col. 2, lines 36-40). In regards to the limitation of claim 22, that reads "and has a catalyst for the decomposition of N_2O" Kongshaug et al disclose that a metal or metal oxide catalyst which selectively decomposes N_2O after the catalyst package can be installed (See col. 3, lines 10-14).

In regards to the limitation of claim 22 that reads "having a height of from 5 to 10 cm" referring to the N_2O catalysts, Kongshaug et al fail to disclose the height of the N_2O decomposition catalyst. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by experimentation the height of this catalyst in such as in the range from 5 to 10 cm, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose,* 105 USPQ 237 (CCPA 1955) and In *Gardner v. TEC Systems, Inc.,* 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied,* 469 U.S. 830, 225 USPQ 232 (1984).

In regards to the limitation that reads "wherein said reactor provides a residence time over the catalyst for the decomposition of N_2O of less than 0.05 s" has been noted but not considered, since "a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus " See *Ex parte Masham,* 2 USPQ2d 1647 (Bd. Patt. App. & Inter 1987).

In regards to claim 23, Kongshaug et al clearly disclose the use of noble metal recovery gauze right after the noble metal gauze catalyst (See col. 2, lines 36-40).

In regards to claim 25, Kongshaug et al fail to disclose the use of a reduction unit for the selective catalytic reduction of nitrogen oxides. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a nitrogen oxide reduction unit after the absorption unit, to reduce the non-absorbed nitrogen oxides of effluent 9 (See col. 3, lines 35-39), since this a well known apparatus or unit to reduce nitrogen oxides. One of

ordinary skill in the art would have been motivated to further treat any nitrogen oxides containing effluent in order to comply with environmental standards.

4. Claims 26-27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kongshaug et al in view of US 5,587,135 (Fetzer et al).

In regards to claim 26, the Kongshaug et al disclose a process for the catalytic decomposition of N_2O in a gas obtained in the preparation of nitric acid by catalytic (See col. 1, lines 6-23) oxidation of ammonia, wherein the gas mixture is contacted with a N_2O catalyst prior to subsequent cooling.

In regards to the limitation of claim 26 that reads "the residence time over the catalyst for the decomposition of N_2O is less than 0.05 s", Kongshaug et al disclose a residence time in the range from 0.1 to 3 seconds for the N_2O decomposition, when no N_2O decomposition catalyst is used (See col. 4, lines 63-68). Kongshaug et al fail to disclose a residence time of less than 0.05 seconds.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a residence time of less than 0.05 s, when a N_2O catalyst is used in Kongshaug et al process, since in col.3, lines 10-14, it is disclosed that "in order to reduce the residence time for the N_2O decomposition catalyst, a metal or metal oxide catalysts...can be installed" this clearly implies that the residence time will be lower than when no decomposition catalyst is used, a residence time value of less than the 0.1 s, which embraces values such as 0.05s.

In regards to claim 27, it is disclosed that the ammonia decomposition is effected at temperatures from 1100 K (837°C) to 1161 K (888°C) (See Table 1) and pressure of 5 bars (See col. 3, line 65).

In regards to the limitation of claim 29 that reads "the residence time over the catalyst for the decomposition of N_2O is 0.03 s", Kongshaug et al disclose a residence time in the range from 0.1 to 3 seconds for the N_2O decomposition, when no N_2O decomposition catalyst is used (See col. 4, lines 63-68). Kongshaug et al fail to disclose a residence time of less than 0.03 seconds.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a residence time of 0.03 s, when a N_2O catalyst is used in Kongshaug et al process, since in col.3, lines 10-14, it is disclosed that "in order to reduce the residence time for the N_2O decomposition catalyst, a metal or metal oxide catalysts...can be installed", this clearly implies that the residence time will be lower than when no decomposition catalyst is used, a residence time value of less than the 0.1 s, which embraces values such as 0.03s.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over kongshaug as applied to claims 22-23 and 25 above, and further in view of US 5,587,135 (Fetzer et al).

In regards to claim 24, Kongshaug et al fail to disclose the N_2O decomposition catalyst used and how it is prepared.

Fetzer et al disclose a N_2O decomposition catalyst prepared by combining Cu Al_2O_4 with tin, lead and/or an element of main group II or transition group II of the Periodic Table of the Elements as oxide or salt or in elemental form and subsequently calcining the mixture at from

300 to 1300°C and a pressure in the range from 0.1 to 200 bar (See claim 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the catalyst disclosed by Fetzer et al in the process and reactor of Kongshaug et al, since Kongshaug et al disclose that any known N_2O decomposition can be used and since Fetzer et al catalyst can be used in for the decomposition of N_2O.

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kongshaug as applied to claims 26-27 and 29 above, and further in view of US 5,587,135 (Fetzer et al).

In regards to claim 28, Kongshaug et al fail to disclose the N_2O decomposition catalyst used and how it is prepared.

Fetzer et al disclose a N_2O decomposition catalyst prepared by combining Cu Al_2O_4 with tin, lead and/or an element of main group II or transition group II of the Periodic Table of the Elements as oxide or salt or in elemental form and subsequently calcining the mixture at from 300 to 1300°C and a pressure in the range from 0.1 to 200 bar (See claim 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the catalyst disclosed by Fetzer et al in the process and reactor of Kongshaug et al, since Kongshaug et al disclose that any known N_2O decomposition can be used and since Fetzer et al catalyst can be used in for the decomposition of N_2O.

Response to Arguments

7. Applicant's arguments filed on 4/15/03 have been fully considered but they are not persuasive.

Applicants argue:

a. "Thus, the person skilled in the art reading the Kongshaug reference would assume that a retention time in the order of seconds will be desirable to achieve the decomposition of N_2O. Shorter retention times, i.e. at the lower end of the range taught by Kongshaug, could be achieved by employing the catalyst for selectively decomposing N_2O. However, the person skilled in the art would not learn from Kongshaug that by employing a catalyst for the decomposition of N_2O a residence time over the catalyst could be reduced to less than 0.05 seconds. The Kongshaug reference contains no pointer in the direction of employing these very short residence times over the catalyst for the decomposition of N_2O."

This argument is not convincing, since the use of the N_2O decomposition catalyst in the process of Kongshaug will clearly reduce the residence time to less than the range of 0.1-3 seconds disclosed by Kongshaug. Kongshaug clearly discloses that by incorporating such catalyst in his process the residence time can be reduced. The reduction on residence time when using the N_2O catalyst in Kongshaug et al process, clearly embrace the instantly claimed range, since the lower value of the range is 0.1 seconds, one of ordinary skill in the art will obtain residence time values of less than 0.1 seconds such as 0.05 and 0.03 seconds.

b. In regards to the Fetzer reference applicants' argue "This reference does not deal with including a catalyst for the decomposition of N_2O directly in a reactor for the catalytic oxidation of ammonia to nitrogen oxides..." This argument is not convincing since Fetzer is only relied upon to show that it is well known in the art to prepare the catalyst as instantly claimed. Fetzer is not relied upon to indicate the possible height of the catalyst bed, or in what process is being used. The combination of Kongshaug et al in view of Fetzer is appropriate

since Kongshaug et al clearly indicates that any well known N_2O decomposition catalyst can be used in his process and reactor (See Kongshaug et al, at col. 3, lines 10-14).

c. Applicants further argue "...Applicants' invention involves more than just a "mere" change in size; it provides, *inter alia*, for the residence time over the catalyst for the decomposition of N_2O of less than 0.05 s. This result is nowhere suggested or expected from the prior art."

This argument is not convincing since, since the result (residence time of less than 0.05 s) is in fact suggested or expected from Kongshaug, when the N_2O catalyst is incorporated into the reactor (See arguments in paragraph (a), above). In regards to the height of the catalyst, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by experimentation the height of this catalyst in such as in the range from 5 to 10 cm, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose,* 105 USPQ 237 (CCPA 1955) and In *Gardner v. TEC Systems, Inc.,* 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied,* 469 U.S. 830, 225 USPQ 232 (1984).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin,* 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner Maribel Medina. The examiner can normally be reached on Monday through Friday from 7:30 AM to 3:30 PM. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Examiner: Maribel Medina
Tel: 703-305-1928
Fax: 703-872-9310
May 13, 2003

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